

1 What is claimed is:

2

3 1. A system for communicating an analog input signal as a
4 modulated binary laser signal over a communication medium recovered
5 as an output digital signal, the system comprising

6 a sigma delta modulator for receiving the analog input signal
7 and modulating the analog signal into a modulated symbol signal,

8 a transmitter for converting the modulated symbol signal into
9 the modulated binary laser signal, and for transmitting the
10 modulated binary laser signal over the communication medium,

11 a receiver for receiving and detecting the modulated binary
12 laser signal for providing a received symbol signal, and

13 a digital filter for filtering the symbol signal into
14 the digital output signal.

15

16

17

18 2. The system of claim 1 wherein the transmitter comprises,

19 a symbol to binary converter for converting the modulated
20 symbol signal from the sigma delta modulator into a converted
21 digital signal, and

22 a pulse width modulator for modulating the laser signal by the
23 converted digital signal into the modulated binary laser signal as
24 a pulse width binary modulated laser signal communicated over the
25 communication medium.

26

27

28

005250" 424550

1 3. The system of claim 2 wherein the receiver comprises,
2 a pulse width detector receiving the pulse width modulated
3 binary laser signal and for providing a detected binary signal, and
4 a binary to symbol converter for converting the detected binary
5 signal into the received symbol signal.

6
7
8 4. The system of claim 3 wherein,
9 the pulse width detector is a pulse width quantizer detector,
10 the detected binary signal is a detected quantized signal,
11 the binary to symbol converter converts the detected quantized
12 signal into the received symbol signal.

13
14
15 5. The system of claim 1 further comprising,
16 a timing recovery loop for generating a timing signal from the
17 receive symbol signal for clocking the digital filter.

18
19
20 6. The system of claim 1 wherein,
21 the sigma delta modulator is a first order sigma delta
22 modulator.

23
24 7. The system of claim 1 wherein,
25 the sigma delta modulator is a second order sigma delta
26 modulator.

1 8. The system of claim 1 wherein the communication medium is a
2 fiber optic.

3
4 9. The transmitter of claim 1 wherein the pulse width modulated
5 laser signal is an on off shift keying signal.

6
7 10. The transmitter of claim 1 wherein the modulated signal is
8 a phase shift keying signal.

9
10 11. A system for communicating an analog input signal as a pulse
11 width modulated binary laser signal over a communication medium
12 recovered as an output digital signal, the system comprising
13 a sigma delta modulator for receiving the analog input signal
14 and modulating the analog signal into a modulated symbol signal,
15 a transmitter for converting the modulated symbol signal into
16 a converted digital signal for pulse width modulating a laser
17 signal into the pulse width modulated binary laser signal, and for
18 transmitting the pulse width modulated binary laser signal over the
19 communication medium,
20 a receiver for receiving and detecting the pulse width
21 modulated binary laser signal to provide a detected binary signal
22 and for converting the detected binary signal into a received
23 symbol signal, and
24 a digital filter for filtering the symbol signal into
25 the digital output signal.